PROBLEM SET 2, Phcg 631

1) What are the two main observables of a NMR experiment and what are their importances?

2) Why does NMR use a referencing scheme where chemical shifts are reported in part-per-million differences from a standard?

3) What do the terms "shielding" and "deshielding" refer to and what consequences they bring to the resonances produced in a NMR spectrum?

4) What are the main factors of a structure that dictate on shielding/chemical shifts?

5) Why are structural assignments/determinations using only chemical shifts very difficult?

6) What are the main aspects that complicate reporting and using chemical shifts?

7) Explain the origin of scalar coupling in terms of spin states of the neighboring atom(s).

8) What is the number of lines in the resulting multiplet produced by equivalent spin = ½ neighbors?

9) What is the spacing between the lines of a multiplet called?

10) What determines the intensity of each line in a scalar coupling multiplet?

11) What information does scalar coupling yield?

12) What does the Karplus curve tell us?